

AUSTRALIA

Australia

Australia is an island continent to the south of Indonesia and Papua New Guinea, lying between latitudes $10^{\circ}41'S$ and $43^{\circ}39'S$ and longitudes $113^{\circ}09'E$ and $153^{\circ}39'E$. The land area is about 8 million km^2 and the population 18 million. The 37,000 km coastline is the longest navigable in the world. Australia has a number of external territories, viz. Christmas Island, Cocos (Keeling) Islands, Coral Sea Islands, Norfolk Island, Heard and McDonald Islands, Macquarie Island, Lord Howe Island, Ashmore and Cartier Islands, and the Australian Antarctic Territory.

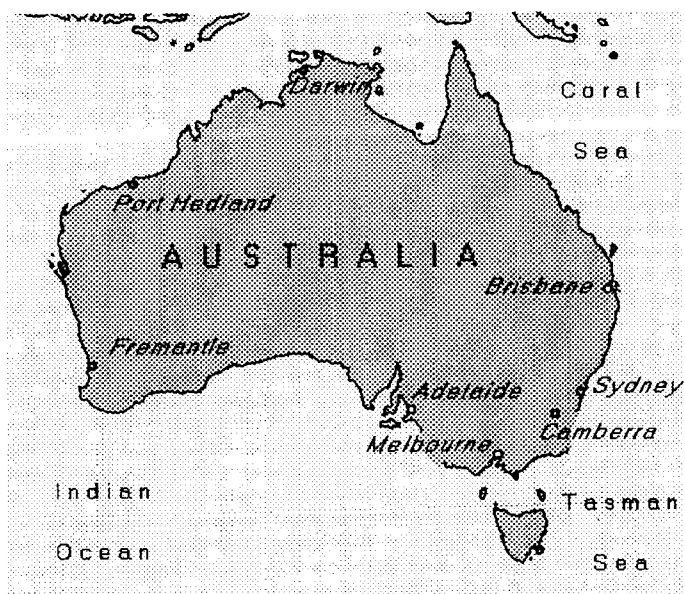


FIG. 1.- Australia.

Australia is both the flattest continent and the driest. Only 6% of the land mass is above 600 m elevation; the highest peak (Mt. Kosciuszko) being 2,228 m. Rainfall over two thirds of the landmass averages less than 500 mm per annum. The climate ranges from tropical monsoon in the north to cool temperate in the south, with large areas of arid desert. The 2,000 km long Great Barrier Reef along the north eastern coast is the largest coral formation in the world.

Australia is administered by a three-tiered system of government: federal, state and local. Symbolic executive power is vested in the British monarch and the highest political authority rests with the democratically elected Federal Parliament. Canberra is the federal capital; however, Sydney (population 3.75 million) and Melbourne (population 3.2 million) are the two largest cities and commercial centres. There are about 70 ports and commercial significance in Australia, including those ports servicing the capital cities and the major exporting ports of Dampier, Port Hedland, Cape Lambert, Hay Point and Gladstone. A producer of primary products, Australia is self-sufficient in most foodstuffs. It is a major exporter of wheat, meat, dairy products, wool and mineral resources, notably bauxite, coal, gold, iron ore, nickel, uranium and petroleum.

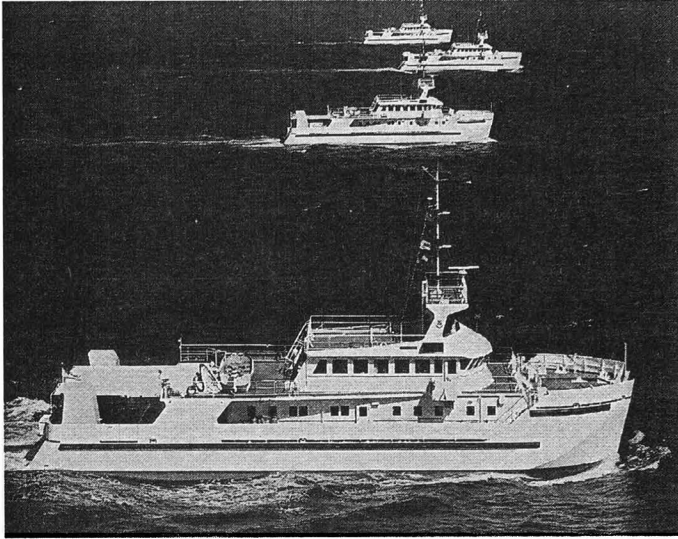


FIG. 2.- HMA Ships BENALLA, SHEPPARTON, PALUMA, MERMAID.

Hydrography in Australia had early beginnings with the Dutch first charting parts of the newly discovered continent in the early 1600's. In 1770, Lt. James COOK, Royal Navy, conducted a running survey of the eastern coast of Australia for a distance of about 2,000 nm. Almost from the beginning of European settlement in the late 18th century, the surveys of its lengthy coastline were undertaken by RN ships and the charts published by the Hydrographic Office of the British Admiralty (BA). By 1825, a series of BA charts based on the work of Lt. Matthew FLINDERS and Phillip Parker KING, RN, had been published to give initial coverage of the Australian coastline. During the next 100 years, as the need arose, particular portions of the coastline were surveyed in more detail.

Hydrographic Service. The Hydrographic Service, Royal Australian Navy (RAN) was established on 1 October 1920, when the British Admiralty indicated that it was unable to accept further responsibility for hydrographic surveys in Australian waters. HMAS GERANIUM, the first RAN surveying ship was commissioned in the same year.

The area for which Australia currently accepts charting responsibility includes Papua New Guinea and covers some 40 million km² of oceans and seas,

extending from the mid-Indian Ocean to mid-Tasman Sea and from the Antarctic to north of Papua New Guinea. 369 charts from a planned total of 724 have been published to date, of which 162 have been produced digitally by the automated charting system, AUTOCHART. Under the International Chart Series, Australia has to date published 13 charts covering its adjacent oceans and seas. Notices of Mariners that affect both Australian and BA charts in the area of Australian charting responsibility are published fortnightly. Following an arrangement between the governments of Australia and Papua New Guinea (PNG), the RAN Hydrographic Service also conducts hydrographic surveys of PNG waters for nautical charting purposes. About 60% of the continental shelf remains unsurveyed. As a result of this, IHO publication S-55 gives Australia a chart assessment rating of AQ-IR (Adequate Improvement Required) although receiving the top rating (4) for technical competence in surveying and charting capability.

The survey fleet presently consists of two offshore survey ships, HMAS MORESBY and HMAS FLINDERS (due to be replaced by two new ships in 1998/9) and four 38 metre catamarans -HMA ships PALUMA, MERMAID, SHEPPARTON and BENNALA for inshore surveys. MORESBY also operates three 10 metre Survey Motor Boats (SMBs), and FLINDERS one. These surface units are supplemented by the recently developed Laser Airborne Depth Sounder System (LADS) installed in a Fokker F27 aircraft. In addition, the Hydrographic Office maintains a small survey unit which is routinely detached for surveys around Australia and in the Antarctic. All ships and SMBs are fitted with digital data gathering and processing systems, employ modern acoustic sensors and the latest satellite position fixing systems. The LADS utilises unique laser technology developed in Australia specifically for hydrographic surveying. Local harbour authorities are responsible for surveys within established harbour limits and provide information to the RAN Hydrographic Service for inclusion in Australian charts. In addition, much useful bathymetric information is also received from commercial organisations carrying out seismic and other mineral exploration expeditions.

In 1994, the Hydrographic Office relocated to new premises in Wollongong. The building was specially designed to accommodate and support the many functions and advanced technology used to produce modern chart products and services. Rapid changes in technology are shaping the style and procedure of hydrographic data acquisition and processing as well as hydrographic information management in the RAN Hydrographic Service. Within the Office, development work is progressing with electronic hydrographic data management and production techniques - these include databases for navigation and other charting information, Electronic Navigation Charts and Raster Charts.

The RAN Hydrographic School in Sydney conducts training courses in hydrography for both officers and sailors. The Officers' Basic (H2) Course has been accredited Category B by FIG/IHO since 1981. Beside Australian students, hydrographic personnel from the Asia-Pacific region also attend these courses. The School is equipped with two SMBs and comparable equipment to that found on the survey ships.

The RAN Hydrographic Service is active in IHO's development of various international standards, including "Quality of Data" and "Exchange of Digital Data" for ECDIS and Standards of Competence for Hydrographic Surveyors. Australia is also the co-ordinator for IHO's charting initiative for Area L.